IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) A field emitter beam source comprising:

an emitter;

an extracting electrode to extract a beam current from the emitter:

a first voltage source for providing a first voltage between the emitter and the extracting electrode to switch on the beam current;

a current source for providing a predetermined beam current [[;]] ,

the current source being coupled to the first voltage source; and

a first voltage disconnecting switch for disconnecting the first voltage source from the current source, wherein the first voltage disconnecting switch is adapted to switch between a voltage control mode and a current control mode.

2. (Previously Presented) The field emitter beam source according to claim 1, comprising a second voltage source for providing a second voltage between the emitter and the extracting electrode to switch off the beam current.

3. (Currently Amended) The field emitter beam source according to claim 1, comprising a second voltage disconnecting switch to switch off the beam current.

4. (Currently Amended) The field emitter beam source according to claim 1, comprising a ~~fourth~~ current source disconnecting switch for disconnecting the current source from the emitter and the extracting electrode.

5. (Previously Presented) The field emitter beam source according to claim 1, comprising a voltage control unit electrically coupled to the first voltage source to adjust the first voltage according to a measured emitter voltage.

6. (Previously Presented) The field emitter beam source according to claim 5, whereby the voltage control unit is electrically coupled to the current source to measure the measured emitter voltage.

7. (Currently Amended) The field emitter beam source according to claim 5, whereby the voltage control unit comprises a storing unit to store the measured emitter voltage; and a ~~third~~ storing unit connecting switch to determine the time at which the measured emitter voltage is stored.

8. (Currently Amended) The field emitter beam source according to claim 5, whereby the voltage control unit comprises an n-channel MOSFET source follower and the first voltage source comprises a p-channel MOSFET source follower~~, or whereby the voltage control unit comprises a p-channel MOSFET source follower and the first voltage source comprises an n-channel MOSFET source follower~~.

9. (Currently Amended) The field emitter beam source according to claim [[1]] 3, further characterized by charge control means to control the time of switch off of the beam current according to a predetermined beam current pulse charge.

10. (Currently Amended) The field emitter beam source according to claim 9, whereby the charge control means comprise a ~~fourth~~ current source disconnecting switch for disconnecting at least one of the group consisting of: the current source ~~and/or~~ and a comparator for comparing the emitter voltage with a comparison voltage.

11. (Currently Amended) The field emitter beam source according to claim 10, whereby the comparator is electrically coupled to the ~~second switch~~ second voltage disconnecting switch to connect the second voltage source.

12. (Currently Amended) The field emitter beam source according to claim 1, ~~whereby the~~ further comprising field emitter beam sources ~~is an array of~~ to form a field emitter beam source array ~~sources~~.

13. (Presently Presented) The field emitter beam source according to claim 12, whereby the array of field emitter beam sources is fabricated using CMOS-technology.

14. (Currently Amended) The field emitter beam source according to claim 1, whereby the predetermined beam current is in the range between 1 microampere and 10 picoampere~~, preferably between 100 nanoampere and 100 picoampere and even more preferred between 20 nanoampere and 1 nanoampere~~.

15. (Previously Presented) The field emitter beam source array of claim 16, wherein the array of field emitter beam sources is monolithically integrated onto the substrate.

16. (Currently Amended) A field emitter beam source array, comprising:

an array of field emitter beam sources integrated onto a semiconductor substrate, wherein each field emitter beam source comprises an emitter;

wherein the array of field emitter beam sources comprises:

an extracting electrode to extract a beam current from each emitter; and

a first voltage source for providing a first voltage between each emitter and the extracting electrode to switch on the beam current;

wherein each field emitter beam source further comprises:

a current source for providing a predetermined beam current;

a first switch electrically coupled to a the first voltage source to switch on a beam current; and

a second switch to switch off the beam current.

17. (Previously Presented) The field emitter beam source array according to claim 16, whereby the second switch is coupled to a second voltage source to switch off the beam current.

18. (Currently Amended) The field emitter beam source array according to claim 16, whereby each current source is coupled to a current source disconnecting switch ~~fourth switch~~ to disconnect the current source.

19. (Previously Presented) The field emitter beam source array according to claim 16, whereby each field emitter beam source comprises a voltage control unit to adjust the first voltage according to a measured emitter voltage.

20. (Previously Presented) The field emitter beam source array according to claim 19, whereby the voltage control unit is coupled to the current source to measure the measured emitter voltage and coupled to the first voltage source to adjust the first voltage.

21. (Previously Presented) The field emitter beam source array according to claim 16, whereby each field emitter beam source comprises a charge control means to control a switch off time of the beam current according to a predetermined beam current pulse charge.

22. (Currently Amended) The field emitter beam source array according to claim 21, whereby the charge control means comprise:

a ~~fourth~~ current source disconnecting switch for disconnecting the current source; and

a comparator for comparing the emitter voltage with a comparison voltage.

23. (Currently Amended) The field emitter beam source array according to claim [[16]] 21, whereby each field emitter beam source comprises an emitter, whereby each emitter is electrically coupled to one of said current sources, one of said first switches, one of said second switches, one of said voltage control units, and ~~and/or~~ one of said charge control means.

24. (Previously Presented) The field emitter beam source array according to claim 16, whereby the second voltage source is common to all field emitter beam sources.

25. (Currently Amended) The field emitter beam source array according to claim 16, whereby the number of field emitter beam sources is larger than four~~, preferably, larger than 1000 and even more preferred larger than 100,000~~.

26. (Currently Amended) An electron ~~Electron~~ beam device, comprising at least one of the field emitter beam sources according to claim 1.

27. (Currently Amended) A method for generating beam current pulses comprising the steps:

providing a field emitter beam source comprising:

at least one emitter;

at least one extracting electrode;

a first voltage source for providing a first voltage between the emitter and the extracting electrode to switch on the beam current;

a current source coupled to the first voltage source; and

a first voltage disconnecting switch for disconnecting the first voltage source from the current source;

providing a predetermined beam current; and

switching on the beam current by applying [[a]] the first voltage between the emitter and the extracting electrode, wherein the first voltage disconnecting switch is adapted to switch between a voltage control mode and a current control mode.

28. (Previously Presented) The method according to claim 27, whereby an emitter voltage between the emitter and the extracting electrode is measured to obtain a measured emitter voltage.

29. (Previously Presented) The method according to claim 27, whereby the first voltage is adjusted to be equal to the measured emitter voltage.

30. (Previously Presented) The method according to claim 27, whereby the beam current is switched off by applying a second voltage between the emitter and the extracting electrode.

31. (Currently Amended) The method according to claim 27, whereby the predetermined beam current is provided by means of [[a]] the current source.

32. (Currently Amended) The method according to claim 27, whereby the first voltage is provided by [[a]] the first voltage source.

33. (Currently Amended) The method according to claim 30, whereby the second voltage is provided by ~~a~~ the second voltage source.

34. (Previously Presented) The method according to claim 28, whereby the measured emitter voltage is obtained at a time when the predetermined beam current is provided for the emitter.

35. (Currently Amended) The method according to claim 28, whereby the measured emitter voltage is measured periodically within intervals of less than 100 s~~, preferably less than a second and even more preferred less than a millisecond~~.

36. (Currently Amended) The method according to claim 29, whereby the first voltage is adjusted periodically within intervals of less than 100 s~~, preferably less than a second and even more preferred less than a millisecond~~.

37. (Currently Amended) The method according to claim 29, whereby between two consecutive adjustments of the first voltage the beam current is switched on at least two times~~, preferably at least 100 times and even more preferred at least 10,000 times~~.

38. (Currently Amended) The method according to claim 29, whereby the first voltage is adjusted by means of a voltage control unit ~~(14)~~ controlling the first voltage source.

39. (Previously Presented) The method according to claim 27 comprising the steps:

disconnecting the current source, the first voltage source and the second voltage source; and

switching off the beam current when the decreasing emitter voltage has reached a predetermined comparison voltage.

40. (Currently Amended) The method according to claim 39, whereby the switching off of the beam current is initiated by a voltage comparator means comparing the emitter voltage with the predetermined comparison voltage.

41. (Currently Amended) The method according to claim 27, whereby the predetermined beam current is in the range between 1 microampere and 10 picoampere~~, preferably between 100 nanoampere and 100 picoampere and even more preferred between 20 nanoampere and 1 nanoampere~~.

42. (Currently Amended) The method according to claim 27, whereby, after switch off, the beam current is reduced by more than 50%. ~~, preferably by more than 90 % and even more preferred by more than 99 % of the predetermined beam current~~.

43. (Currently Amended) The method according to claim 27, ~~whereby the~~ comprising at least one of:

the first voltage becomes connected or disconnected from the emitter or the extracting electrode by means of a first voltage disconnecting switch;

the second voltage becomes connected or disconnected from the emitter or the extracting electrode by means of a second voltage disconnecting switch; ~~and/or~~ and

the current source becomes connected or disconnected from the emitter or the extracting electrode by means of a ~~fourth~~ current source disconnecting switch.

44. (Previously Presented) Electron beam device, comprising at least one of the field emitter beam source arrays according to claim 16.